



Code guidance from the Department of Labor and Industries  
Office of the Chief Electrical Inspector

Janet Lewis, Chief Electrical Inspector

Vol. 2 No. 5

May 1999

## Electrical code issues and answers.

### ● Flexible Cord Drop Pendants

We have received several questions regarding the acceptability of supporting flexible cord pendant drops from the building structure when supplied from junction boxes, wireways, etc. Changed language in the National Electrical Code 400-8(4) Exception appears to allow flexible cords to be attached to building surfaces only when the flexible cord drop is fed from a busway. The 1996 NEC 400-8 Exception allowed a flexible cord pendant drop to be attached at one point to the building structure for a tension relief device (see Electrical Policy 98-05).

Review of the Report on Comments reveals that no substantiation was submitted to require a busway only restriction. 1999 NEC 400-7(a)(1) and NEC 362-11 & 26 specifically allow flexible cord pendant drops from junction boxes, wireways, etc. We will continue to allow flexible cord pendant drops to be supported at one point (within 2' of the junction box) from the building structure when supplied from junction boxes, wireways, etc.

### ● Special documentation requirements for multiple feeders and branch circuits

A new Part B has been added to 1999 NEC 225 for More than One Building or Other Structure. 1999 NEC 225-30(b)(e) and NEC 225-32, Exception 1 are substantial changes from previous requirements.

1999 NEC 225-30(b)(e) allows *“additional feeders or branch circuits to supply installations under single management where documented safe switching where documented safe switching procedures are established and maintained for disconnection”*. NEC 225-32, Exception No. 1 allows the disconnecting means to be *“located elsewhere on the premises”* for *“installations under single management where documented safe switching procedures are established and maintained for disconnection”*. The words *“large capacity multibuilding industrial installations”* have been removed. Single management is when the electrical installation is under the control of one entity, usually the facility owner. Documented safe switching procedures must include a method of disconnection that ensures the elimination of unsafe conditions for personnel and property. A list of authorized and qualified persons allowed to implement the “safe switching” must be contained in the documentation. “Qualified” refers to any person(s) who are trained in responsible and safe implementation of the documented safe switching method. The documentation must be made available at the time of inspection.

### ● Coordination of Inspections – especially roadway crossings

All permitted electrical installations must be inspected and the electrical inspector must be afforded the opportunity to inspect each installation prior to it being covered.

Coordination of inspections such as conduit and traffic loops in roadways present special challenges for both the installer and the electrical inspector. Both must be willing to work closely together. Only with mutual cooperation can inspections be made in a timely manner while preserving public safety. We are very concerned with your being able to cover these installations as quickly as possible in order to not impede traffic flows and prevent possible injury to the public. We urge all parties (installers, electrical inspectors, and electrical field supervisors) to closely coordinate all inspection issues thus ensuring an efficient inspection process.

### ● Proper use of annual permits

There is some confusion about what work can be performed under an annual permit for plants employing regular maintenance electricians. The annual permit covers routine maintenance of existing systems and equipment, altered circuits, altered feeders, new circuits or feeders from existing gear, circuit extensions, lighting retrofits, replacement of equipment, panelboards, and service gear on existing feeders or service conductors. Adding new feeders and circuits for a new addition to an existing building will also be allowed. The cost of the annual permit must cover the number of inspections requested. If it does not, then a trip fee will be assessed for progress inspections at \$32.50 per half-hour as we do on other projects.

Installation of a new service with accompanying new feeders and branch circuits, to a new building or to an existing building will require a separate Electrical Work Permit under WAC 294-46-910(2).

**● Bonding metal gas piping**

1999 NEC 250-104(b) requires that *“each aboveground portion of a gas piping system upstream from the equipment shutoff valve shall be electrically continuous and bonded to the grounding electrode system.”*

Before the 1999 code was adopted the requirement for bonding metal gas piping was in the 1996 NEC Article 250-80(b). That article required bonding all other interior metal piping with a bonding jumper sized in accordance with Table 250-95 using the rating of the largest circuit that could energize the piping. The 1999 code-making panel accepted a proposal to specifically address metal gas piping. The method of sizing the bonding jumper to metal gas piping is absent from the new code article. Review of the Report on Comments makes it clear that the intent of the Code Panel was to size the bonding jumper for metal gas piping in the same manner as for other metal piping as found in NEC 250-104(c). The bonding jumper to metal gas piping must be sized in accordance with Table 250-122 of the National Electrical Code using the rating of the largest circuit that may energize the piping.

**● Carnival 15 and 20 amp 125 volt receptacles**

1999 NEC Article 525-18 of the National Electrical Code requires that *“All 125 volt, single-phase receptacle outlets that are in use by personnel shall have listed ground-fault circuit-interrupter protection for personnel. The ground-fault circuit interrupter shall be permitted to be an integral part of the attachment plug or located in the power-supply cord, within 12-in. (305 mm) of the attachment plug. For the purposes of this section, listed cord sets incorporating ground-fault circuit-interrupter protection for personnel shall be permitted. Egress lighting shall not be connected to the load side terminals of a ground-fault circuit interrupter receptacle.”*

The department will grant a one-year grace period to comply with 1999 NEC 525-18 provided a written Assured Equipment Grounding Program procedure is continuously enforced at each site where a carnival or amusement ride is set up. This procedure must be enforced to ensure the safety of equipment grounding conductors for all cord sets and receptacles, as described in 1999 NEC 305-6(b)(2). The tests required in NEC 305-6(b) and the Assured Equipment Grounding Program must be recorded and made available to the electrical inspector.

**● Hospital grade receptacles in dental patient care areas**

In 1999 NEC Article 517 patient care areas are defined as *“Any portion of a health care facility wherein patients are intended to be examined or treated. General care areas are patient bedrooms, examining rooms, treatment rooms, clinics, and similar areas in which it is intended that the patient shall come in contact with ordinary appliances such as a nurse call system, electrical beds, examining lamps, telephone, and entertainment devices.”* Areas of a dental clinic in which patient care is administered are normally classified as general care areas, but may be considered critical care areas by the health care administrator (such as in an oral surgery area).

When patient bed locations are specifically addressed in 1999 NEC 517-18 and NEC 517-19, the department considers a dental chair to be a patient bed location in both general and critical care areas of dental clinics.

Investigation of the standard for listed dental chairs (ANSI/UL 544-Medical and Dental Equipment) shows that cord connected dental chairs are appliances required to have a locking type attachment plug designated “hospital only” or a conventional 2-blade with grounding pin attachment plug designated “hospital grade.” It is logical to require a “hospital grade” attachment plug to be connected to a “hospital grade” receptacle.

1999 NEC 517-18 & 517-19 describe the specific requirements for receptacles, circuits, and grounding in general and critical care area patient bed locations and specifies all receptacles installed must be “hospital grade” and so identified. To eliminate any confusion about patient bed location “boundaries” in open areas or treatment rooms, the required receptacles must be installed within the patient vicinity defined in 1999 NEC 517-3. Patient vicinity is an area in which patients are normally cared for, and it is *“the space with surfaces likely to be contacted by the patient or an attendant who can touch the patient. Typically in a patient room, this encloses a space within the room not less than 6 feet (1.83 m) beyond the perimeter of the bed (dental chair, treatment booth and the like) in its nominal location, and extending vertically not less than 7½ feet (2.29 m) above the floor.”* The words “not less than” must be noted. The patient vicinity could be much larger than the 6-foot dimension mentioned.